UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/803,777	03/12/2001	Haruo Ohta	MAT-8106US	8895

7590   10/22/2003

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EXAMINER
RODRIGUEZ, GLENDA P

ART UNIT	PAPER NUMBER
2651	

DATE MAILED: 10/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _29 August 2003_ .

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-29_ is/are pending in the application.

　　4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-8,10-13 and 15-29_ is/are rejected.

7)☒ Claim(s) _9 and 14_ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

　　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

　　If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

　　a)☒ All b)☐ Some * c)☐ None of:

　　　1.☒ Certified copies of the priority documents have been received.

　　　2.☒ Certified copies of the priority documents have been received in Application No. _____ .

　　　3.☒ Copies of the certified copies of the priority documents have been received in this National Stage
　　　　　application from the International Bureau (PCT Rule 17.2(a)).
　　* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

　　a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4)☐ Interview Summary (PTO-413) Paper No(s). _____ .
5)☐ Notice of Informal Patent Application (PTO-152)
6)☐ Other: _____ .

DETAILED ACTION

The text of those sections of Title 35, U.S. Code not included in this action can be found

in a prior Office action.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 5, 19, 23, 27 and 28 are rejected under 35 U.S.C. 102(e) as being anticipated by

Takahashi (6, 046, 874).

Regarding Claim 27 and 28, Takahashi teaches a data detecting apparatus for equalizing

an input signal by partial response by employing at least one of partial response class 4 (PR4)

and extended partial response class 4 (EPR4), and decoding the input signal, comprising:

Equalizing the input signal by PR4, and obtaining a first equalized

signal (See Fig. 1, Element 30. Takahashi teach a PR4 equalizer);

Second equalizing means for equalizing the input signal by EPR4,

and generating a second equalizing signal (See Fig. 1, Element 32);

Judging the signal condition of the input signal by the first

equalized signal and second equalized signal, discriminating the

optimum data detecting method, and generating a condition

discriminating signal (See Fig. 1, Element 34 and Col. 6, Lines 22-

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Second equalizing means for equalizing the input signal by EPR4,

and generating a second equalizing signal (See Fig. 1, Element 32);

Judging the signal condition of the input signal by the first

equalized signal and second equalized signal, discriminating the

optimum data detecting method, and generating a condition

discriminating signal (See Fig. 1, Element 34 and Col. 6, Lines 22-

28. Takahashi teaches a medium that chooses the signal according

to which of the two methods has fewer errors. It is known in the art that if the less errors the medium detects, the better the medium is actually detecting the data.);

Obtaining the first decoded data from the first equalized signal when the condition discriminating signal judges that the first decoded data is optimum, and stopping the step of obtaining the second decoded data from the second equalized signal (Col. 6, Lines 17-28. Takahashi evaluates which equalizer is optimum (or has fewer errors). Whichever is optimum is then decoded, the other would not be considered for decoding, because it has more errors.);

Obtaining the second decoded data from the second equalized signal when the condition discriminating signal judges that the first decoded data is not optimum, and stopping the step of obtaining the first decoded data from the first equalized signal (Col. 6, Lines 17-28. Takahashi evaluates which equalizer is optimum (or has fewer errors). Whichever is optimum is then decoded, the other would not be considered for decoding, because it has more errors.).

Regarding Claims 1 and 5, Takahashi teaches a data separating/detecting apparatus for equalizing an input signal by partial response by employing at least one of partial response class 4 (PR4) and extended partial response class 4 (EPR4), and decoding the input signal, comprising:

First equalizing means for equalizing the input signal by PR4, and generating a first equalized signal (See Fig. 1, Element 30. Takahashi teach a PR4 equalizer);

First decoding means for decoding the first equalized signal and obtaining first decoded data (Col. 6, Lines 20-25. Takahashi teach the use of filters, demodulators that perform decoding functions of read signals)

Second equalizing means for equalizing the input signal by EPR4, and generating a second equalizing signal (See Fig. 1, Element 32);

Condition discriminating means for discriminating the signal condition of the input signal from the first equalized signal and second equalized signal, judging the optimum data detecting method, and generating a condition discriminating signal (See Fig. 1, Element 34 and Col. 6, Lines 22-28. Takahashi teaches a medium that chooses the signal according to which of the two methods has fewer errors. It is known in the art that if the less errors the medium detects, the better the medium is actually detecting the data.);

Second decoding means for decoding the second equalized signal and obtaining second decoded data (Col. 6, Lines 20-25. Takahashi teach the use of filters, demodulators that perform decoding functions of read signals.);

And selecting means for selecting one of the first decoded data and

the second decoded data based on the condition discriminating

signal, so as to obtain detected data (Col. 6, Lines 17-28).

Regarding Claims 19 and 23, Takahashi teaches a data separating/detecting method for

equalizing an input signal by partial response by employing at least one of partial response class

4 (PR4) and extended partial response class 4 (EPR4), and decoding the input signal, comprising:

First equalizing means for equalizing the input signal by PR4, and

generating a first equalized signal (See Fig. 1, Element 30.

Takahashi teach a PR4 equalizer);

First decoding means for decoding the first equalized signal and

obtaining first decoded data (Col. 6, Lines 20-25. Takahashi teach

the use of filters, demodulators that perform decoding functions of

read signals)

Second equalizing means for equalizing the input signal by EPR4,

and generating a second equalizing signal (See Fig. 1, Element 32);

Condition discriminating means for discriminating the signal

condition of the input signal from the first equalized signal and

second equalized signal, judging the optimum data detecting

method, and generating a condition discriminating signal (See Fig.

1, Element 34 and Col. 6, Lines 22-28. Takahashi teaches a

medium that chooses the signal according to which of the two

methods has fewer errors. It is known in the art that if the less

errors the medium detects, the better the medium is actually

detecting the data.);

Second decoding means for decoding the second equalized signal

and obtaining second decoded data (Col. 6, Lines 20-25.

Takahashi teach the use of filters, demodulators that perform

decoding functions of read signals.);

And selecting means for selecting one of the first decoded data and

the second decoded data based on the condition discriminating

signal, so as to obtain detected data (Col. 6, Lines 17-28).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 2, 6, 20 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Takahashi in view of Coker et al. (US Pat. No. 5, 619, 539). Takahashi teach all the limitations

of Claim 1. Takahashi fail to teach wherein said second equalizing means includes first filter

means for converting and filtering the entered first equalized signal, and converting into an EPR4

equalized signal. However, this feature is well known in the art, as disclosed by Coker et al.,

wherein it teaches an PR4 signal being changed to an EPR4 signal by using a filter (Pat. No. 5,

619, 539; See Fig. 3B. It would have been obvious to a person of ordinary skill in the art, at the

time the invention was made, to modify Takahashi's invention in order for the medium to be able

to change from a PR4 to an EPR4 with the use of a filter because it need to obtain a EPR4

sample in order to make the comparison between an PR4 and an EPR4 signal.

Claims 3, 4, 7, 8, 10-13, 15-18, 21, 22, 25, 26 and 29 are rejected under 35 U.S.C. 103(a)

as being unpatentable over Takahashi. in view of Takashi et al. (US Pat. No. 6, 519, 715).

Regarding Claims 3, 7, 8, 21 and 25, Takahashi teach all the limitations of Claims 1, 5,

19 and 23, respectively. Takahashi fail to teach that each partial response is accompanied by an

error detector and an averaging filter. However, this feature is well known in the art, as

disclosed by Takashi et al., wherein it teaches a partial response class IV (or PR4) detecting

method wherein it encompasses an error detector and a smoothing filter (Col. 8, Lines 50-59. It

is obvious that this invention could also be applied to the EPR4 signal if a delaying signal is

applied to a PR4 signal, therefore making the conversion form PR4 to EPR4.). It would have

been obvious to a person of ordinary skill in the art, at the time the invention was made, to

modify Takahashi's invention in order for the medium to detect errors and smooth the signal in

order for the signal selecting component to be more effective when selecting the optimum signal.

Regarding Claim 4, 8, 22 and 26, Takahashi and Takashi et al. teach all the limitations of

Claims 3, 7, 21 and 25. Takahashi teaches a signal selecting means that depends on the

amplitude of PR4 and EPR4 when reading data (Col. 7, Lines 14-20. Takahashi teaches the use

of an AGC control circuit that gives the instruction to the MPU to assign which of the two partial

response methods the apparatus should choose.).

Regarding Claims 10, 11, 12, 13 and 29, Takahashi and Takashi et al. It is obvious to a

person of ordinary skill in the art to know that if one signal is selected because of its optimum

performance, the other signal is stopped because the latter is not being neither considered nor used. It is also obvious to a person of ordinary skill in the art to know that if this is done, it lowers power consumption because by selecting one of both signals, the other signal is not being used, therefore it does not need to be energized with an operating power. It would have been obvious to a person of ordinary skill in the art, at the time the invention was made, to modify Takahashi's invention in order for the medium to perform more effectively because by reducing the power, the system is more susceptible to not choose incorrectly and therefore reading more effectively.

Regarding Claims 15-18, Takahashi and Takashi et al. teach all the limitations of Claims 10, 11, 12, and 13, respectively. Takahashi further teaches a timing control circuit that that generates a control signal based on the discrimination (Col. 3, Line 65 to Col. 4, Line 4 and Col. 6, Line 63 to Col. 7, Line 4 and Col. 7, Lines 56-60).

Allowable Subject Matter

Claims 9 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

Applicant's arguments filed 08/29/03 have been fully considered but they are not persuasive. Applicant recites that Takahashi says nothing about selecting PR4 or an EPR4 signal based on an evaluation of a signal condition. Applicant further recites that the present invention is evaluating signal condition in real time and selecting the PR4 signal or EPR4 signal based on the real time evaluation. Examiner does not concur because Takahashi teaches a reproducing

circuit that equalizes a PR4 and an EPR4 signal and by using a selecting portion that if a read error occurs during a reproduction operation, it selects the other signal in order to select the signal with a low error rate, thus providing an optimum means (Pat. No. 6, 046, 874; Col. 3, Lines 6-12 and Col. 4, Lines 6-12) (Takahashi discloses it as error recovery). Takahashi does disclose that the PR4 signal and the EPR4 signal is selected according from the head and cylinder selection. However, the signal is chosen according to an evaluation in the selection of the head and the cylinder, information supplied by the read access (Col. 3, Lines 15-18). In other words, the medium has to refer to the position wherein the head is in order to judge which partial response medium supplies the channel with the optimum signal. Takahashi further teach that it switch switches the PR4 or EPR4 also based on a signed condition (Col. 6, Lines 16-42). Additionally, Applicant fails to specifically claim that the judging and selecting condition is performed in real time.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Glenda P. Rodriguez whose telephone number is (703) 305-8411. The examiner can normally be reached on Monday thru Thursday: 7:00-5:00; alternate Friday.

If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, David Hudspeth can be reached on (703) 308-4825. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-9000.

Art Unit: 2697

gpr
October 9, 2003.

DAVID HUDSPETH
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TECHNOLOGY CENTER 2600